CLAIMS

1. Low-dose tablets obtained by the direct compression of microgranules which are essentially comprised of a neutral support, coated with a polymeric layer comprising at least one pharmaceutically acceptable polymer and allowing the modified release of the active principles in an aqueous medium, to which is applied an active layer containing at least one active principle.

2. Tablets according to claim 1, wherein the aforementioned polymeric layer contains in addition at least one pharmaceutically acceptable binding agent.

3. Tablets according to the claim 1 or 2, wherein the total quantity of the polymer of the aforesaid polymeric layer represents between 1% and 100% by weight of the weight of the neutral support, preferably between 1% and 50% by weight of the weight of the neutral support.

4. Tablets according to any of the claims 1 to 3, wherein the aforementioned polymer is selected among the extended-release polymers and the disintegrating polymers.

5. Tablets according to claim 4, wherein the aforementioned disintegrating polymers are selected among the polyvinylpyrrolidone derivatives, the starch derivatives, the calcium and magnesium salts, the alginates and the cellulose derivatives, as well as the mixtures thereof.

6. Tablets according to claim 5, wherein the aforementioned disintegrating polymers are selected among crospovidone, povidone, sodium carboxymethylcellulose, croscarmellose sodium, methylcellulose, low-substituted hydroxypropylcellulose, sodium carboxymethyl starch and branched starch, as well as the mixtures thereof.

7. Tablets according to claim 4, wherein the aforementioned extended-release polymers are selected among the polymers of hydrophilic nature with gelling properties, preferably of a viscosity higher than 1000 mPa.s, measured in a 2% w/w aqueous solution at 20 °C.

8. Tablets according to claim 7, wherein the aforementioned extended-release polymers are selected among the polymers derived from cellulose, the natural or modified natural polysaccharides such as the gums, the galactomannans, the glucomannans, the succinoglycans, the scleroglucans, the carbomers and the poly(ethylene oxides), as well as the mixtures thereof.

9. Tablets according to claim 8, wherein the aforementioned polymers derived from cellulose are cellulose ethers of medium to high viscosity chosen among hydroxyethylcellulose, hydroxypropylcellulose, and hydroxypropylmethylcellulose, as well as the mixtures thereof.

10. Tablets according to claim 8, wherein the aforementioned carbomers belongs to the group comprising Carbopol® 971 P, Carbopol® 974 P and Carbopol® 934 P.

11. Tablets according to claim 8, wherein the aforementioned gums are selected among alginic acid, the alginates, agar-agar, the carrageenans, carob gum, gum guar, gum tragacanth, gum arabic, cassia gum, xanthan gum, gum karaya, tara gum and gellan gum, as well as the mixtures thereof.

12. Tablets according to claim 4, wherein the aforementioned extended-release polymers are selected among the polymers and copolymers derived from methacrylic acid insoluble in water regardless of pH, as well as the mixtures thereof.

13. Tablets according to claim 12, wherein the aforementioned extended-release polymers are selected among the poly(ethyl acrylate, methyl methacrylate, trimethylamonioethyl methacrylate) chlorides.

14. Tablets according to claim 4, wherein the aforementioned extended-release polymers are selected among the cellulose derivatives insoluble in water, as well as the mixtures thereof.

15. Tablets according to claim 14, wherein the aforementioned extended-release polymers are selected among ethylcellulose and cellulose acetate, as well as the mixtures thereof.

16. Tablets according to claim 4, wherein the aforementioned extended-release polymers are selected among the mucoadhesive polymers such as sodium carboxymethylcellulose, the carbomers, sodium alginate, hydroxyethylcellulose, hydroxypropylcellulose, hydroxypropylmethylcellulose, gelatin, guar gum, poly(ethylene oxide), dextrin and chitosan.

17. Tablets according to any of the claims 1 to 16, wherein the aforementioned polymeric layer comprises in addition a wax or a derivative thereof, a glycerol fatty acid derivative, or a mixture thereof.

18. Tablets according to claim 17, wherein the wax is selected among natural or purified beeswax.

19. Tablets according to claim 17, wherein the glycerol fatty acid derivative is selected among glycerol monostearate, glycerol monooleate, glycerol palmitostearate, and the mixtures of the fatty acid esters and glycerides of polyethylene glycol, such as those belonging to the lauroyl macrogolglycerides family.

20. Tablets according to any of the claims 1 to 19, wherein the aforementioned active layer contains in addition at least one pharmaceutically acceptable binding agent.

21. Tablets according to any of the claims 1 to 20, wherein the aforementioned neutral support is a microsphere comprised of sucrose and of corn starch, of a size between 50 µm and 3000 µm, preferably between 100 µm and 1000 µm, and still more preferentially between 100 µm and 500 µm.

22. Tablets according to any of the claims 1 to 21, wherein they contain in addition a lubricant in a quantity less than 5% by weight compared to the total weight of the tablet.

23. Tablets according to any of the claims 1 to 22, wherein in addition they are coated by one or more layers of film-coating agents.

24. Tablets according to claim 23, wherein the aforementioned film-coating agents are gastroresistant film-coating agents chosen among the polymers derived from methacrylic acid, in particular from copolymers of methacrylic acid, from derivatives of polyvinyl acetate, such as polyvinyl acetate phthalate and polymethacrylic acid, from ethyl acrylate, from derivatives of cellulose such as hydroxypropylmethyl cellulose phthalate, as well as the mixtures thereof.

25. Tablets according to any of the claims 1 to 24, wherein each contains less than 50 mg, preferably less than 25 mg, even more preferentially less than 10 mg of the active principle.

26. Tablets according to any of the claims 1 to 25, wherein the active principle is selected among the hormones or

the derivatives thereof, the active principles acting on the central nervous system, the active principles acting on the cardiovascular system, the antibiotics, the antivirals, the analgesics and the anti-inflammatories.

27. Tablets according to claim 26, wherein the aforementioned active principles acting on the central nervous system are selected among the anti-epileptics, the anti-Parkinson's drugs, the psychostimulants, the psychotropics, the antidepressants, the anxiolytics and the antipsychotics.

28. Tablets according to claim 26, wherein the aforementioned active principles acting on the cardiovascular system are selected among the antihypertensives, the antithrombotics, the anti-aggregating agents and the cholesterol-lowering agents.

29. Tablets according to any of the claims 1 to 28, wherein the active principle is distributed homogeneously.

30. Tablets according to any of the claims 1 to 29, wherein they are provided in scored form.

31. A method of preparation of the tablets according to any of the claims 1 to 30, comprising the following steps:

- the neutral support is moistened beforehand using a dampening solution possibly containing a binding agent;
- the polymer is then applied to the surface of the neutral support by powdering;
- an layering solution comprising the active principle and possibly a binding agent are sprayed on the surface of the polymeric layer;
- the microgranules thus obtained are then dried, then directly compressed;
- the tablet thus obtained is possibly coated with one or more layers of a film-coating agent.
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32. A method of preparation of the tablets according to claim 31, wherein said compression is carried out using a lubricant at less than 5% by weight compared to the total weight of the tablets.

33. A functionalized excipient comprised of a neutral support coated with a polymeric layer comprising at least one pharmaceutically acceptable polymer and allowing the modified release of the active principles in an aqueous medium.

34. A microgranule comprised of a neutral support coated with a polymeric layer comprising at least one pharmaceutically acceptable polymer and allowing the modified release of the active principles in an aqueous medium, to which is applied an active layer containing at least one active principle.

35. The use of the tablets according to any of the claims 1 to 30, for the administration by oral route of low-dose active principles, in particular for the administration of active principles whose release must be modified over time.

36. The use of the tablets according to any of the claims 1 to 30, for the administration by sublingual or transmucosal route of low-dose active principles.